WHAT IS CLAIMED IS:

1. An automatic cold working system comprising:

a machine tool for machining holes in a workpiece;

a cold working mandrel assembly movable in relation to the workpiece; and

means for automatically aligning a mandrel of the mandrel assembly with the holes of the workpiece and a surface of the workpiece.

2. The automatic cold working system of Claim 1, wherein each hole of the workpiece has a hole vector defined by an axis extending through a center of the hole, the mandrel has a mandrel vector defined by an axis extending longitudinally through a center of the mandrel, and the alignment means aligns the hole vector and the mandrel vector.

3. The automatic cold working system of Claim 2, wherein the hole vectors are oriented in different directions.

4. The automatic cold working system of Claim 1, wherein the mandrel assembly comprises a base attached to the mandrel, and the alignment means aligns a surface of the base substantially flush with the surface of the workpiece adjacent to a hole of the workpiece to be cold worked.

5. The automatic cold working system of Claim 1, wherein the machine tool comprises a drill.

6. The automatic cold working system of Claim 5, wherein the drill and the mandrel are arranged at an offset distance from each other, the mandrel has a mandrel vector defined by an axis extending longitudinally through a center of the mandrel, the drill has a drill vector defined by an axis extending longitudinally along the length of the drill, and the mandrel vector and drill vector are oriented in substantially the same direction.

7. The automatic cold working system of Claim 6, wherein the offset distance is from about 4 to about 10 inches.

8. The automatic cold working system of Claim 1, wherein the aligning means aligns the mandrel assembly against the surface of the workpiece by providing a stop position of the mandrel at an extended distance beyond a first distance at which the base of the mandrel initially contacts the surface of the workpiece.

9. The automatic cold working system of Claim 8, wherein the extended distance is from about 0.05 to about 0.1 inch.

10. The automatic cold working system of Claim 8, wherein the extended distance is about 0.075 inch.

11. The automatic cold working system of Claim 1, wherein the mandrel assembly is mounted on a five-axis head.

12. The automatic cold working system of Claim 1, wherein the mandrel is a split mandrel.

13. The automatic cold working system of Claim 1, wherein the machine tool and the cold working mandrel assembly are movable and the workpiece is stationary during the cold working operations.

14. The automatic cold working system of Claim 1, wherein the alignment means is mounted on a transportable support structure.

15. The automatic cold working system of Claim 1, wherein the surface of the workpiece is curved.

16. The automatic cold working system of Claim 1, wherein the workpiece comprises an aircraft component.

17. A method of automatically cold working holes in a workpiece, the method comprising:

moving a mandrel assembly in relation to the workpiece;

automatically aligning a mandrel of the mandrel assembly with at least one of the holes of the workpiece and a surface of the workpiece adjacent to the at least one hole; and

cold working the at least one hole.

18. The method of Claim 17, wherein each hole of the workpiece has a hole vector defined by an axis extending through a center of the hole, the mandrel has a mandrel vector defined by an axis extending longitudinally through a center of the mandrel, and the hole vector is aligned with the mandrel vector.

19. The method of Claim 18, wherein the hole vectors are oriented in different directions.

20. The method of Claim 17, wherein the mandrel assembly comprises a base attached to the mandrel, and a surface of the base is aligned substantially flush with the surface of the workpiece adjacent to a hole of the workpiece to be cold worked.

21. The method of Claim 17, further comprising providing a machine tool arranged at an offset distance from the mandrel for machining the holes in the workpiece.

22. The method of Claim 21, wherein the machine tool comprises a drill.

23. The method of Claim 22, wherein the drill and the mandrel are arranged at an offset distance from each other, the mandrel has a mandrel vector defined by an axis extending longitudinally through a center of the mandrel, the drill has a drill vector defined by an axis extending longitudinally along the length of the drill, and the mandrel vector and drill vector are oriented in substantially the same direction.

24. The method of Claim 23, wherein the offset distance is from about 4 to about 10 inches.

25. The method of Claim 17, wherein the mandrel assembly is aligned against the surface of the workpiece by providing a stop position of the mandrel at an extended distance beyond a first distance at which the base of the mandrel initially contacts the surface of the workpiece.

26. The method of Claim 25, wherein the extended distance is from about 0.05 to about 0.1 inch.

27. The method of Claim 25, wherein the extended distance is about 0.075 inch.

28. The method of Claim 17, wherein the mandrel assembly is movable in at least five axes.

29. The method of Claim 17, wherein the mandrel is a split mandrel.

30. The method of Claim 17, wherein the surface of the workpiece is curved.

31. The method of Claim 17, wherein the workpiece comprises an aircraft component.